Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

EcoXtreme LT Ink, AI2-BK

1.2. Relevant identified uses of the substance or mixture and uses advised against

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
Importer/Supplier:	Roland DGA Corporation
Address:	15363 Barranca Parkway Irvine, CA 92618 U.S.A.
Phone:	949-727-2100
FAX:	949 727 2112
Revision:	11 August, 2011

1.4. Emergency telephone: 949-727-2100

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to EU Directive 1999/45/EC.

Xn	R20/21
Xi	R36/38
	R19

2.2. Label elements

In accordance with 1999/45/EC:

Xn Harmful

Wording of Risk and Safety Phrases:

R20/21 Harmful by inhalation and in contact with skin.
R36/38 Irritating to eyes and skin.
R19 May form explosive peroxides.
S24/25 Avoid contact with skin and eyes.
S41 In case of fire and/or explosion do not breathe fumes.

2.3. Other hazards

Potential Health Effects:

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.
Chronic Health Hazards:	No data available.
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Resin	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Black pigment	8005-02-5	-	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
1-Methyl-2-pyrrolidinone	872-50-4	212-828-1	N/A for the moment	<5	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Repr. 1B: H360 STOT SE 3: H335	Repr. Cat. 2; R61, Xi: R36/37/38
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	20-30	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-15	Not classified as hazardous	Not classified as hazardous
Ethyl acetoacetate	141-97-9	205-516-1	N/A for the moment	5-10	Eye Irrit. 2: H319	Xi: R36
1-Phenoxypropan-2-ol	770-35-4	212-222-7	N/A for the moment	1-5	Eye Irrit. 2: H319	Xi:R36
Ethylene glycol monobutyl ether acetate	112-07-2	203-933-3	N/A for the moment	10-30	Acute Tox. 4:H332 Acute Tox. 4:H312	Xn: R20/21
Surfactant	C.B.I.	C.B.I.	N/A for the moment	0.1 - 1.0	Not classified as hazardous	Not classified as hazardous

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin contact :	In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
Eye contact :	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
Ingestion :	If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.

4.3. Indication of any immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water spray, CO_2, dry chemical or foam.

Unsuitable extinguishing media:

Do NOT use High volume water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: approx. 75 °C (T.C.C.)

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

EU:

components	The threshold limit	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm,333mg/m^3
1-Methyl-2-pyrrolidinone	10ppm, 40mg/m^3	20ppm, 80mg/m^3

US:

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

components	PEL
Diethylene glycol diethyl ether	5ppm, 33mg/m^3

Australia: OELs

components	TWA	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm ,333mg/m^3
1-Methyl-2-pyrrolidinone	25ppm, 103mg/m^3	75ppm, 309mg/m^3

8.2 . Exposure controls:

Occupational exposure control: Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

Personal protective equipment:

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Eye protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse.
Do not eat, drink or smoke in handling or storage area.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Black Liquid
Odor:	Fruity odor
Boiling point:	approx. 205 °C
Flash point:	approx. 75 °C
Auto-ignition temperature:	not below 220 °C
Viscosity:	10.0~12.0 mPa·s
Relative density:	0.980~0.990 (29 °C)
pH:	No data available
Water content:	< 0.8%
Solid content:	10 - 20%
Explosive properties:	Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether) Lower limits: 0.8 vol% Upper limits: 8.5 vol% (Ethylene glycol monobutyl ether acetate)
Oxidizing properties:	No data available
Vapor pressure:	0.5 hPa (20 °C, Diethylene glycol diethyl ether) 0.31 hPa (20 °C, Ethylene glycol monobutyl ether acetate)
Solubility:	No data available
Water Solubility:	Easily soluble (Diethylene glycol diethyl ether)
Evaporation rate:	No data available
Partition coefficient: n-octanol/water:	No data available
Melting Point:	No data available
Decomposition Temperature:	No data available

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable at normal temperatures.
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures.
10.5. Incompatible materials:	Oxidizers and explosives.
10.6. Hazardous decomposition products:	Thermal decomposition will produce oxides of carbon, copper and nitrogen.

11. Toxicological information

*Based on toxicology data of chemically similar material

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) 1-Methyl-2-pyrrolidinone	Oral LD_{50}	3914 mg/kg (Rat)*
	Dermal LD_{50}	8000 mg/kg (Rabbit)*
	Inhalation LC_{50}	5.1mg/L (4hr) (Rat)*

Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

2) Ethylene glycol monobutyl ether acetate	Oral LD_{50}	2400 mg/kg (Rat)*
	Dermal LD_{50}	1500 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available

3) Ethyl Acetoacetate	Oral LD_{50}	3980 mg/kg (Rat)*
	Dermal LD_{50}	No data available
	Inhalation LC_{50}	No data available

4) 1-Phenoxypropan-2-ol	Oral LD_{50}	2830 mg/kg (Rat)*
	Dermal LD_{50}	$\geq$2000 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available

Skin corrosion/irritation: No data available

May cause severe skin irritation.

Serious eye damage/eye irritation: No data available

May cause severe eye irritation.

Respiratory or skin sensitisation: No data available

Germ cell mutagenicity: No data available

Reproductive toxicity: No data available

Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen.

STOT-single exposure: Overexposure of eye may be irritating.

Overexposure of skin may cause irritation and in some people swelling and redness.

Inhalation may result in respiratory irritation and anesthesia.

Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available

Aspiration hazard: No data available

12. Ecological information

12.1. Toxicity:

1-Methyl-2-pyrrolidinone: Bluegill LC_{50}: 832 mg/L (22 °C), bull trout LC_{50}: 3048 mg/L (22 °C)

12.2. Persistence and degradability: No data available

12.3. Bioaccumulative potential: No data available

12.4. Mobility in soil: No data available

12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.

12.6. Other adverse effects: Disclosure of ink and abandonment has a possibility of affecting environment. Then, cautions are required for handing. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not applicable

15. Regulatory information

US information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

Product contains Black Pigment that is subject to TSCA Section 4 test rule and to TSCA Section 12(b) export notification requirements.

Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

SARA TITLE III:

Section 313: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone) (1.0% de minimis concentration)
Diethylene glycol diethyl ether (Chemical Category N230) (1.0% de minimis concentration)
Ethylene glycol monobutyl ether acetate (Chemical Category N230) (1.0% de minimis concentration)

California Proposition 65: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone)

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

EU information:

Chemical Safety Assessment according to (EC)1907/2006:

This product has not carried out any Chemical Safety Assessment yet.

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other information

List of relevant H-Statements in section 3:

H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H360 May damage fertility or the unborn child.

List of relevant R-phrases:

R19 May form explosive peroxides.
R20/21 Harmful by inhalation and in contact with skin.
R36 Irritating to eyes.
R36/38 Irritating to eyes and skin.
R36/37/38 Irritating to eyes, respiratory system and skin.
R61 May cause harm to the unborn child.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

EcoXtreme LT Ink, AI2-CY

1.2. Relevant identified uses of the substance or mixture and uses advised against

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
Importer/Supplier:	Roland DGA Corporation
Address:	15363 Barranca Parkway Irvine, CA 92618 U.S.A.
Phone:	949-727-2100
FAX:	949 727 2112
Revision:	11 August, 2011

1.4. Emergency telephone: 949-727-2100

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to EU Directive 1999/45/EC.

Xn	R20/21
Xi	R36/38
	R19

2.2. Label elements

In accordance with 1999/45/EC:

Xn Harmful

Wording of Risk and Safety Phrases:

R20/21 Harmful by inhalation and in contact with skin.
R36/38 Irritating to eyes and skin.
R19 May form explosive peroxides.
S24/25 Avoid contact with skin and eyes.
S41 In case of fire and/or explosion do not breathe fumes.

2.3. Other hazards

Potential Health Effects

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.
Chronic Health Hazards:	No data available.
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Resin	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Cyan pigment	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
1-Methyl-2-pyrrolidinone	872-50-4	212-828-1	N/A for the moment	<5	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Repr. 1B: H360 STOT SE 3: H335	Repr. Cat. 2; R61, Xi: R36/37/38
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	20-30	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-15	Not classified as hazardous	Not classified as hazardous
Ethyl acetoacetate	141-97-9	205-516-1	N/A for the moment	5-10	Eye Irrit. 2: H319	Xi: R36
1-phenoxypropan-2-ol	770-35-4	212-222-7	N/A for the moment	1-5	Eye Irrit. 2: H319	Xi:R36
Ethylene glycol monobutyl ether acetate	112-07-2	203-933-3	N/A for the moment	10-30	Acute Tox. 4:H332 Acute Tox. 4:H312	Xn: R20/21
Surfactant	C.B.I.	C.B.I.	N/A for the moment	0.1 - 1.0	Not classified as hazardous	Not classified as hazardous

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin contact :	In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
Eye contact :	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
Ingestion :	If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

CO_2, Dry Chemical.

Unsuitable extinguishing media:

Do NOT use High volume water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: approx. 75 °C (T.C.C.)

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

EU:

components	The threshold limit	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm,333mg/m^3
1-Methyl-2-pyrrolidinone	10ppm, 40mg/m^3	20ppm, 80mg/m^3

US:

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

components	PEL
Diethylene glycol diethyl ether	5ppm, 33mg/m^3

Australia: OELs

components	TWA	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm ,333mg/m^3
1-Methyl-2-pyrrolidinone	25ppm, 103mg/m^3	75ppm, 309mg/m^3

8.2 . Exposure controls:

Occupational exposure control: Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

Personal protective equipment:

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Eye protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Cyan Liquid
Odor:	Fruity odor
Boiling point/boiling range:	approx. 209°C
Flash point:	approx. 75 °C
Auto-Ignition temperature:	not below 220 °C
Viscosity of ink:	10.65~11.65 mPa·s
Relative density:	0.980~0.990 (27 °C)
pH:	No data available
Explosive properties:	Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether) Lower limits: 0.8 vol% Upper limits: 8.5 vol% (Ethylene glycol monobutyl ether acetate)
Oxidizing properties:	No data available
Vapor pressure:	0.5 hPa (20 °C, Diethylene glycol diethyl ether) 0.31 hPa (20 °C, Ethylene glycol monobutyl ether acetate)
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Solubility	No data available
Water Solubility:	Easily soluble (Diethylene glycol diethyl ether)
Evaporation rate:	No data available
Partition coefficient: n-octanol/water:	No data available
Melting Point	No data available
Decomposition Temperature	No data available

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable at normal temperatures.
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures.
10.5. Incompatible materials:	Oxidizers and explosives.
10.6. Hazardous decomposition products:	Thermal decomposition will produce oxides of carbon, copper and nitrogen.

11. Toxicological information

*Based on toxicology data of chemically similar material

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) 1-Methyl-2-pyrrolidinone	Oral LD_{50}	3914 mg/kg (Rat)*
	Dermal LD_{50}	8000 mg/kg (Rabbit)*
	Inhalation LC_{50}	5.1mg/L (4hr) (Rat)*
	Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.	
2) Ethylene glycol monobutyl ether acetate	Oral LD_{50}	2400 mg/kg (Rat)*
	Dermal LD_{50}	1500 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available
3) Ethyl Acetoacetate	Oral LD_{50}	3980 mg/kg (Rat)*
	Dermal LD_{50}	No data available
	Inhalation LC_{50}	No data available
4) Phenoxy-2-propanol	Oral LD_{50}	2830 mg/kg (Rat)*
	Dermal LD_{50}	$\geq$2000 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available

Skin corrosion/irritation:	No data available
	May cause severe skin irritation.
Serious eye damage/eye irritation:	No data available
	May cause severe eye irritation.
Respiratory or skin sensitisation:	No data available
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.
STOT-single exposure:	Overexposure of eye may be irritating.
	Overexposure of skin may cause irritation and in some people swelling and redness.
	Inhalation may result in respiratory irritation and anesthesia.
	Ingestion may cause an upset stomach.
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological information

12.1. Toxicity:

1-Methyl-2-pyrrolidinone: Bluegill LC_{50}: 832 mg/L (22 °C), bull trout LC_{50}: 3048 mg/L (22 °C)

12.2. Persistence and degradability: No data available

12.3. Bioaccumulative potential: No data available

12.4. Mobility in soil: No data available

12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.

12.6. Other adverse effects: Disclosure of ink and abandonment has a possibility of affecting environment. Then, cautions are required for handing. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not applicable

15. Regulatory information

US information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

SARA TITLE III:
Section 313: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone) (1.0% de minimis concentration)
Diethylene glycol diethyl ether (Chemical Category N230) (1.0% de minimis concentration)
Ethylene glycol monobutyl ether acetate (Chemical Category N230) (1.0% de minimis concentration)

California Proposition 65: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone)
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

EU information:

Chemical Safety Assessment according to (EC)1907/2006:

This product has not carried out any Chemical Safety Assessment yet.

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other information

List of relevant H-Statements in section 3:

H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H360 May damage fertility or the unborn child

List of relevant R-phrases:

R19 May form explosive peroxides.
R20/21 Harmful by inhalation and in contact with skin.
R36 Irritating to eyes.
R36/38 Irritating to eyes and skin.
R36/37/38 Irritating to eyes, respiratory system and skin.
R61 May cause harm to the unborn child.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

EcoXtreme LT Ink, AI2-MG

1.2. Relevant identified uses of the substance or mixture and uses advised against

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
Importer/Supplier:	Roland DGA Corporation
Address:	15363 Barranca Parkway Irvine, CA 92618 U.S.A.
Phone:	949-727-2100
FAX:	949 727 2112
Revision:	11 August, 2011

1.4. Emergency telephone: 949-727-2100

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to EU Directive 1999/45/EC.

Xn	R20/21
Xi	R36/38
	R19

2.2. Label elements

In accordance with 1999/45/EC:

Xn Harmful

Wording of Risk and Safety Phrases:

R20/21 Harmful by inhalation and in contact with skin.
R36/38 Irritating to eyes and skin.
R19 May form explosive peroxides.
S24/25 Avoid contact with skin and eyes.
S41 In case of fire and/or explosion do not breathe fumes.

2.3. Other hazards

Potential Health Effects

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.
Chronic Health Hazards:	No data available.
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Resin	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Magenta pigment	C.B.I.	C.B.I.	N/A for the moment	5-10	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	20-30	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	5-10	Not classified as hazardous	Not classified as hazardous
Ethyl acetoacetate	141-97-9	205-516-1	N/A for the moment	10-20	Eye Irrit. 2: H319	Xi: R36
1-phenoxypropan-2-ol	770-35-4	212-222-7	N/A for the moment	1-5	Eye Irrit. 2: H319	Xi:R36
Ethylene glycol monobutyl ether acetate	112-07-2	203-933-3	N/A for the moment	10-30	Acute Tox. 4:H332 Acute Tox. 4:H312	Xn: R20/21
Surfactant	C.B.I.	C.B.I.	N/A for the moment	0.1 - 1.0	Not classified as hazardous	Not classified as hazardous

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin contact :	In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
Eye contact :	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
Ingestion :	If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water spray, CO_2, dry chemical or foam.

Unsuitable extinguishing media:

Do NOT use High volume water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: approx. 75 °C (T.C.C.)

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

EU:

components	The threshold limit	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm,333mg/m^3

US:

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

components	PEL
Diethylene glycol diethyl ether	5ppm, 33mg/m^3

Australia: OELs

components	TWA	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm ,333mg/m^3

8.2 . Exposure controls:

Occupational exposure control: Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

Personal protective equipment:

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Eye protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse.
Do not eat, drink or smoke in handling or storage area.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Magenta Liquid
Odor:	Fruity odor
Boiling point/boiling range:	approx. 202°C
Flash point:	approx. 75 °C
Auto-Ignition temperature:	not below 220 °C
Viscosity of ink:	10.0~11.0 mPa·s
Relative density:	0.983~0.993 (29 °C)
pH:	No data available
Explosive properties:	Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether) Lower limits: 0.8 vol% Upper limits: 8.5 vol% (Ethylene glycol monobutyl ether acetate)

Oxidizing properties:	No data available
Vapor pressure:	0.5 hPa (20 °C, Diethylene glycol diethyl ether) 0.31 hPa (20 °C, Ethylene glycol monobutyl ether acetate)
Solubility	No data available
Water Solubility:	Easily soluble (Diethylene glycol diethyl ether)
Evaporation rate:	No data available
Partition coefficient: n-octanol/water:	No data available
Melting Point	No data available
Decomposition Temperature	No data available

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable at normal temperatures.
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures.
10.5. Incompatible materials:	Oxidizers and explosives.
10.6. Hazardous decomposition products:	Thermal decomposition will produce oxides of carbon, copper and nitrogen.

11. Toxicological information

*Based on toxicology data of chemically similar material

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) Ethylene glycol monobutyl ether acetate	Oral LD_{50}	2400 mg/kg (Rat)*
	Dermal LD_{50}	1500 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available
2) Ethyl Acetoacetate	Oral LD_{50}	3980 mg/kg (Rat)*
	Dermal LD_{50}	No data available
	Inhalation LC_{50}	No data available
3) Phenoxy-2-propanol	Oral LD_{50}	2830 mg/kg (Rat)*
	Dermal LD_{50}	$\geq$2000 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available

Skin corrosion/irritation:	No data available May cause severe skin irritation.
Serious eye damage/eye irritation:	No data available May cause severe eye irritation.
Respiratory or skin sensitisation:	No data available
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.
STOT-single exposure:	Overexposure of eye may be irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach.
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological information

12.1. Toxicity:	No data available
12.2. Persistence and degradability:	No data available
12.3. Bioaccumulative potential:	No data available
12.4. Mobility in soil:	No data available
12.5. Results of PBT and vPvB assessment:	Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects:	Disclosure of ink and abandonment has a possibility of affecting environment. Then, cautions are required for handing. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not applicable

15. Regulatory information

US information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

SARA TITLE III:
Section 313: Diethylene glycol diethyl ether (Chemical Category N230) (1.0% de minimis concentration)
Ethylene glycol monobutyl ether acetate (Chemical Category N230) (1.0% de minimis concentration)

California Proposition 65: Not regulated

EU information:

Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other information

List of relevant H-Statements in section 3:
H312 Harmful in contact with skin.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.

List of relevant R-phrases:
R19: May form explosive peroxides.
R20/21: Harmful by inhalation and in contact with skin.
R36: Irritating to eyes.
R36/38: Irritating to eyes and skin.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

EcoXtreme LT Ink, AI2-YE

1.2. Relevant identified uses of the substance or mixture and uses advised against

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
Importer/Supplier:	Roland DGA Corporation
Address:	15363 Barranca Parkway Irvine, CA 92618 U.S.A.
Phone:	949-727-2100
FAX:	949 727 2112
Revision:	11 August, 2011

1.4. Emergency telephone: 949-727-2100

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to EU Directive 1999/45/EC.

Xn	R20/21
Xi	R36/38
	R19

2.2. Label elements

In accordance with 1999/45/EC:

Xn Harmful

Wording of Risk and Safety Phrases:

R20/21 Harmful by inhalation and in contact with skin.
R36/38 Irritating to eyes and skin.
R19 May form explosive peroxides.
S24/25 Avoid contact with skin and eyes.
S41 In case of fire and/or explosion do not breathe fumes.

2.3. Other hazards

Potential Health Effects:

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.
Chronic Health Hazards:	No data available.
Carcinogenicity:	The product contains Nickel compounds. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Resin	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Yellow pigment	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
1-Methyl-2-pyrrolidinone	872-50-4	212-828-1	N/A for the moment	<5	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Repr. 1B: H360 STOT SE 3: H335	Repr. Cat. 2; R61, Xi: R36/37/38
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	20-30	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-15	Not classified as hazardous	Not classified as hazardous
Ethyl acetoacetate	141-97-9	205-516-1	N/A for the moment	10-20	Eye Irrit. 2: H319	Xi: R36
1-phenoxypropan-2-ol	770-35-4	212-222-7	N/A for the moment	1-5	Eye Irrit. 2: H319	Xi:R36
Ethylene glycol monobutyl ether acetate	112-07-2	203-933-3	N/A for the moment	10-30	Acute Tox. 4:H332 Acute Tox. 4:H312	Xn: R20/21
Surfactant	C.B.I.	C.B.I.	N/A for the moment	0.1 - 1.0	Not classified as hazardous	Not classified as hazardous

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin contact :	In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
Eye contact :	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
Ingestion :	If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.

4.3. Indication of any immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water spray, CO_2, dry chemical or foam.

Unsuitable extinguishing media:

Do NOT use High volume water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: approx. 75 °C (T.C.C.)

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

EU:

components	The threshold limit	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm,333mg/m^3
1-Methyl-2-pyrrolidinone	10ppm, 40mg/m^3	20ppm, 80mg/m^3

US:

components	OSHA:PEL
Nickel, insoluble compounds, as Ni	1mg/m^3

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

components	PEL
Nickel, insoluble compounds, as Ni	0.1mg/m^3
Diethylene glycol diethyl ether	5ppm, 33mg/m^3

Australia: OELs

components	TWA	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm ,333mg/m^3
1-Methyl-2-pyrrolidinone	25ppm, 103mg/m^3	75ppm, 309mg/m^3

8.2 . Exposure controls:

Occupational exposure control: Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

Personal protective equipment:

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Eye protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Yellw Liquid
Odor:	Fruity odor
Boiling point:	approx. 207 °C
Flash point:	approx. 75 °C
Auto-ignition temperature:	not below 220 °C
Viscosity:	10.0~11.0 mPa·s
Relative density:	0.972~0.982 (29 °C)
pH:	No data available
Water content:	< 0.8%
Solid content:	10 - 20%
Explosive properties:	Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether) Lower limits: 0.8 vol% Upper limits: 8.5 vol% (Ethylene glycol monobutyl ether acetate)
Oxidizing properties:	No data available
Vapor pressure:	0.5 hPa (20 °C, Diethylene glycol diethyl ether) 0.31 hPa (20 °C, Ethylene glycol monobutyl ether acetate)
Solubility:	No data available
Water Solubility:	Easily soluble (Diethylene glycol diethyl ether)
Evaporation rate:	No data available
Partition coefficient: n-octanol/water:	No data available
Melting Point:	No data available
Decomposition Temperature:	No data available

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable at normal temperatures.
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures.
10.5. Incompatible materials:	Oxidizers and explosives.
10.6. Hazardous decomposition products:	Thermal decomposition will produce oxides of carbon, copper and nitrogen.

11. Toxicological information

*Based on toxicology data of chemically similar material

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) 1-Methyl-2-pyrrolidinone	Oral LD_{50}	3914 mg/kg (Rat)*
	Dermal LD_{50}	8000 mg/kg (Rabbit)*
	Inhalation LC_{50}	5.1mg/L (4hr) (Rat)*
	Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.	
2) Ethylene glycol monobutyl ether acetate	Oral LD_{50}	2400 mg/kg (Rat)*
	Dermal LD_{50}	1500 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available
3) Ethyl Acetoacetate	Oral LD_{50}	3980 mg/kg (Rat)*
	Dermal LD_{50}	No data available
	Inhalation LC_{50}	No data available
4) Phenoxy-2-propanol	Oral LD_{50}	2830 mg/kg (Rat)*
	Dermal LD_{50}	$\geqq$2000 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available

Skin corrosion/irritation: No data available

May cause severe skin irritation.

Serious eye damage/eye irritation: No data available

May cause severe eye irritation.

Respiratory or skin sensitisation: No data available

Germ cell mutagenicity: No data available

Reproductive toxicity: No data available

Carcinogenicity: The product contains Nickel compounds.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

STOT-single exposure: Overexposure of eye may be irritating.
Overexposure of skin may cause irritation and in some people swelling and redness.
Inhalation may result in respiratory irritation and anesthesia.
Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available

Aspiration hazard: No data available

12. Ecological information

12.1. Toxicity:

1-Methyl-2-pyrrolidinone:	Bluegill LC_{50}: 832 mg/L (22 °C), bull trout LC_{50}: 3048 mg/L (22 °C)
12.2. Persistence and degradability:	No data available
12.3. Bioaccumulative potential:	No data available
12.4. Mobility in soil:	No data available
12.5. Results of PBT and vPvB assessment:	Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects:	Disclosure of ink and abandonment has a possibility of affecting environment. Then, cautions are required for handing. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not applicable

15. Regulatory information

US information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

SARA TITLE III:
Section 313: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone) (1.0% de minimis concentration)
Diethylene glycol diethyl ether (Chemical Category N230) (1.0% de minimis concentration)
Ethylene glycol monobutyl ether acetate (Chemical Category N230) (1.0% de minimis concentration)
Pigment yellow (Nickel Compounds) (Category Code N495)

California Proposition 65: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone)
Pigment yellow (Nickel Compounds)

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

EU information:

Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other information

List of relevant H-Statements in section 3:
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H360 May damage fertility or the unborn child.

List of relevant R-phrases:
R19 May form explosive peroxides.
R20/21 Harmful by inhalation and in contact with skin.
R36 Irritating to eyes.
R36/38 Irritating to eyes and skin.
R36/37/38 Irritating to eyes, respiratory system and skin.
R61 May cause harm to the unborn child.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

EcoXtreme LT Ink, AI2-LC

1.2. Relevant identified uses of the substance or mixture and uses advised against

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
Importer/Supplier:	Roland DGA Corporation
Address:	15363 Barranca Parkway Irvine, CA 92618 U.S.A.
Phone:	949-727-2100
FAX:	949 727 2112
Revision:	11 August, 2011

1.4. Emergency telephone: 949-727-2100

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to EU Directive 1999/45/EC.

Xn	R20/21
Xi	R36/38
	R19

2.2. Label elements

In accordance with 1999/45/EC:

Xn Harmful

Wording of Risk and Safety Phrases:

R20/21 Harmful by inhalation and in contact with skin.
R36/38 Irritating to eyes and skin.
R19 May form explosive peroxides.
S24/25 Avoid contact with skin and eyes.
S41 In case of fire and/or explosion do not breathe fumes.

2.3. Other hazards

Potential Health Effects

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.
Chronic Health Hazards:	No data available.
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Resin	C.B.I.	C.B.I.	N/A for the moment	5-10	Not classified as hazardous	Not classified as hazardous
Cyan pigment	C.B.I.	C.B.I.	N/A for the moment	0.5-5	Not classified as hazardous	Not classified as hazardous
1-Methyl-2-pyrrolidinone	872-50-4	212-828-1	N/A for the moment	<5	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Repr. 1B: H360 STOT SE 3: H335	Repr. Cat. 2; R61, Xi: R36/37/38
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	30-40	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-15	Not classified as hazardous	Not classified as hazardous
Ethyl acetoacetate	141-97-9	205-516-1	N/A for the moment	5-10	Eye Irrit. 2: H319	Xi: R36
1-phenoxypropan-2-ol	770-35-4	212-222-7	N/A for the moment	1-5	Eye Irrit. 2: H319	Xi:R36
Ethylene glycol monobutyl ether acetate	112-07-2	203-933-3	N/A for the moment	10-30	Acute Tox. 4:H332 Acute Tox. 4:H312	Xn: R20/21
Surfactant	C.B.I.	C.B.I.	N/A for the moment	0.1 - 1.0	Not classified as hazardous	Not classified as hazardous

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin contact :	In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
Eye contact :	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
Ingestion :	If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

CO_2, Dry Chemical.

Unsuitable extinguishing media:

Do NOT use High volume water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: approx. 75 °C (T.C.C.)

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

EU:

components	The threshold limit	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm,333mg/m^3
1-Methyl-2-pyrrolidinone	10ppm, 40mg/m^3	20ppm, 80mg/m^3

US:

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

components	PEL
Diethylene glycol diethyl ether	5ppm, 33mg/m^3

Australia: OELs

components	TWA	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm ,333mg/m^3
1-Methyl-2-pyrrolidinone	25ppm, 103mg/m^3	75ppm, 309mg/m^3

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Light Cyan Liquid
Odor:	Fruity odor
Boiling point/boiling range:	approx. 206°C
Flash point:	approx. 75 °C
Auto-Ignition temperature:	not below 220 °C
Viscosity of ink:	9.95~10.95 mPa·s
Relative density:	0.964~0.974 (27 °C)
pH:	No data available
Explosive properties:	Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether) Lower limits: 0.8 vol% Upper limits: 8.5 vol% (Ethylene glycol monobutyl ether acetate)

Oxidizing properties:	No data available
Vapor pressure:	0.5 hPa (20 °C, Diethylene glycol diethyl ether) 0.31 hPa (20 °C, Ethylene glycol monobutyl ether acetate)
Solubility	No data available
Water Solubility:	Easily soluble (Diethylene glycol diethyl ether)
Evaporation rate:	No data available
Partition coefficient: n-octanol/water:	No data available
Melting Point	No data available
Decomposition Temperature	No data available

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable at normal temperatures.
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures.
10.5. Incompatible materials:	Oxidizers and explosives.
10.6. Hazardous decomposition products:	Thermal decomposition will produce oxides of carbon, copper and nitrogen.

11. Toxicological information

*Based on toxicology data of chemically similar material

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) 1-Methyl-2-pyrrolidinone	Oral LD_{50}	3914 mg/kg (Rat)*
	Dermal LD_{50}	8000 mg/kg (Rabbit)*
	Inhalation LC_{50}	5.1mg/L (4hr) (Rat)*
	Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.	
2) Ethylene glycol monobutyl ether acetate	Oral LD_{50}	2400 mg/kg (Rat)*
	Dermal LD_{50}	1500 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available
3) Ethyl Acetoacetate	Oral LD_{50}	3980 mg/kg (Rat)*
	Dermal LD_{50}	No data available
	Inhalation LC_{50}	No data available
4) Phenoxy-2-propanol	Oral LD_{50}	2830 mg/kg (Rat)*
	Dermal LD_{50}	$\geq$2000 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available

Skin corrosion/irritation:	No data available May cause severe skin irritation.
Serious eye damage/eye irritation:	No data available May cause severe eye irritation.
Respiratory or skin sensitisation:	No data available
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.
STOT-single exposure:	Overexposure of eye may be irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach.
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological information

12.1. Toxicity:

1-Methyl-2-pyrrolidinone:	Bluegill LC_{50}: 832 mg/L (22 °C), bull trout LC_{50}: 3048 mg/L (22 °C)
12.2. Persistence and degradability:	No data available
12.3. Bioaccumulative potential:	No data available
12.4. Mobility in soil:	No data available
12.5. Results of PBT and vPvB assessment:	Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects:	Disclosure of ink and abandonment has a possibility of affecting environment. Then, cautions are required for handing. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

14.1. UN Class/UN Number:	
ADR/ADG/DOT, IMDG, or IATA :	Not applicable
14.2. UN proper shipping name:	
ADR/ADG/DOT, IMDG, or IATA :	Not applicable
14.3. Transport hazard class(es):	
ADR/ADG/DOT, IMDG, or IATA :	Not applicable
14.4. Packing group:	
ADR/ADG/DOT, IMDG, or IATA :	Not applicable
14.5. Environmental hazards:	
ADR/ADG/DOT, IMDG, or IATA :	Not applicable
14.6. Special precautions for user:	Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:

Not applicable

15. Regulatory information

US information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

SARA TITLE III:

Section 313: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone) (1.0% de minimis concentration)
Diethylene glycol diethyl ether (Chemical Category N230) (1.0% de minimis concentration)
Ethylene glycol monobutyl ether acetate (Chemical Category N230) (1.0% de minimis concentration)

California Proposition 65: 1-Methyl-2-pyrrolidinone (N-Methyl pyrrolidone)

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

EU information:

Chemical Safety Assessment according to (EC)1907/2006:

This product has not carried out any Chemical Safety Assessment yet.

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other information

List of relevant H-Statements in section 3:

H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H360 May damage fertility or the unborn child.

List of relevant R-phrases:

R19 May form explosive peroxides.
R20/21 Harmful by inhalation and in contact with skin.
R36 Irritating to eyes.
R36/38 Irritating to eyes and skin.
R36/37/38 Irritating to eyes, respiratory system and skin.
R61 May cause harm to the unborn child.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier

EcoXtreme LT Ink, AI2-LM

1.2. Relevant identified uses of the substance or mixture and uses advised against

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
Importer/Supplier:	Roland DGA Corporation
Address:	15363 Barranca Parkway Irvine, CA 92618 U.S.A.
Phone:	949-727-2100
FAX:	949 727 2112
Revision:	11 August, 2011

1.4. Emergency telephone: 949-727-2100

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to EU Directive 1999/45/EC.

Xn	R20/21
Xi	R36/38
	R19

2.2. Label elements

In accordance with 1999/45/EC:

Xn Harmful

Wording of Risk and Safety Phrases:

R20/21 Harmful by inhalation and in contact with skin.
R36/38 Irritating to eyes and skin.
R19 May form explosive peroxides.
S24/25 Avoid contact with skin and eyes.
S41 In case of fire and/or explosion do not breathe fumes.

2.3. Other hazards

Potential Health Effects

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.
Chronic Health Hazards:	No data available.
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Resin	C.B.I.	C.B.I.	N/A for the moment	5-10	Not classified as hazardous	Not classified as hazardous
Magenta pigment	C.B.I.	C.B.I.	N/A for the moment	0.5-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	30-40	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-15	Not classified as hazardous	Not classified as hazardous
Ethyl acetoacetate	141-97-9	205-516-1	N/A for the moment	5-10	Eye Irrit. 2: H319	Xi: R36
1-phenoxypropan-2-ol	770-35-4	212-222-7	N/A for the moment	1-5	Eye Irrit. 2: H319	Xi:R36
Ethylene glycol monobutyl ether acetate	112-07-2	203-933-3	N/A for the moment	10-30	Acute Tox. 4:H332 Acute Tox. 4:H312	Xn: R20/21
Surfactant	C.B.I.	C.B.I.	N/A for the moment	0.1-1.0	Not classified as hazardous	Not classified as hazardous

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Skin contact :	In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
Eye contact :	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
Ingestion :	If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation:	May cause respiratory irritation.
Skin Contact:	May cause severe skin irritation.
Eye Contact:	May cause severe eye irritation.
Ingestion:	Ingestion may be harmful or fatal.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Water spray, CO_2, dry chemical or foam.

Unsuitable extinguishing media:

Do NOT use High volume water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: approx. 75 °C (T.C.C.)

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

EU:

components	The threshold limit	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm,333mg/m^3

US:

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

components	PEL
Diethylene glycol diethyl ether	5ppm, 33mg/m^3

Australia: OELs

components	TWA	STEL
Ethylene glycol monobutyl ether acetate	20ppm,133mg/m^3	50ppm ,333mg/m^3

8.2 . Exposure controls:

Occupational exposure control: Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

Personal protective equipment:

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Eye protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Light Magenta Liquid
Odor:	Fruity odor
Boiling point/boiling range:	approx. 205°C
Flash point:	approx. 75 °C
Auto-Ignition temperature:	not below 220 °C
Viscosity of ink:	9.70~10.70 mPa·s
Relative density:	0.960~0.970 (29 °C)
pH:	No data available
Explosive properties:	Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether) Lower limits: 0.8 vol% Upper limits: 8.5 vol% (Ethylene glycol monobutyl ether acetate)
Oxidizing properties:	No data available
Vapor pressure:	0.5 hPa (20 °C, Diethylene glycol diethyl ether) 0.31 hPa (20 °C, Ethylene glycol monobutyl ether acetate)

Solubility	No data available
Water Solubility:	Easily soluble (Diethylene glycol diethyl ether)
Evaporation rate:	No data available
Partition coefficient: n-octanol/water:	No data available
Melting Point	No data available
Decomposition Temperature	No data available

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable at normal temperatures
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	Thermal decomposition will produce oxides of carbon, copper and nitrogen.

11. Toxicological information

*Based on toxicology data of chemically similar material

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) Ethylene glycol monobutyl ether acetate	Oral LD_{50}	2400 mg/kg (Rat)*
	Dermal LD_{50}	1500 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available
2) Ethyl Acetoacetate	Oral LD_{50}	3980 mg/kg (Rat)*
	Dermal LD_{50}	No data available
	Inhalation LC_{50}	No data available
3) Phenoxy-2-propanol	Oral LD_{50}	2830 mg/kg (Rat)*
	Dermal LD_{50}	$\geq$2000 mg/kg (Rabbit)*
	Inhalation LC_{50}	No data available

Skin corrosion/irritation:	No data available May cause severe skin irritation.
Serious eye damage/eye irritation:	No data available May cause severe eye irritation.
Respiratory or skin sensitisation:	No data available
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.
STOT-single exposure:	Overexposure of eye may be irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach.
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological information

12.1. Toxicity:	No data available
12.2. Persistence and degradability:	No data available
12.3. Bioaccumulative potential:	No data available
12.4. Mobility in soil:	No data available
12.5. Results of PBT and vPvB assessment:	Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects:	Disclosure of ink and abandonment has a possibility of affecting environment. Then, cautions are required for handing. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not applicable

15. Regulatory information

US information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

SARA TITLE III:
Section 313: Diethylene glycol diethyl ether (Chemical Category N230) (1.0% de minimis concentration)
Ethylene glycol monobutyl ether acetate (Chemical Category N230) (1.0% de minimis concentration)

California Proposition 65: Not regulated

EU information:

Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other information

List of relevant H-Statements in section 3:

H312 Harmful in contact with skin.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.

List of relevant R-phrases:

R19: May form explosive peroxides.
R20/21: Harmful by inhalation and in contact with skin.
R36: Irritating to eyes.
R36/38: Irritating to eyes and skin.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.